BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Allocation of Spectrum Below	)	ET Docket No. 94-32
5 GHz Transferred from	)	
Federal Government Use	)	

REPLY COMMENTS OF SOUTHWESTERN BELL TELEPHONE COMPANY

SOUTHWESTERN BELL TELEPHONE COMPANY

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January 6, 1995

ET Docket No. 94-32

REPLY COMMENTS OF SOUTHWESTERN BELL TELEPHONE COMPANY

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SUMMARY*

Southwestern Bell Telephone Company (SWBT) submits these Reply Comments in response to Comments that were filed in response to the Commission's Notice of Proposed Rulemaking (NPRM) in this proceeding.

In its NPRM, the Commission sought Comments on several suggested potential applications for 50 MHz of spectrum that is to be transferred immediately from Federal Government use to the private sector. SWBT suggests that a portion (2390-2400 MHz) of the spectrum available in this proceeding be allocated exclusively for deploying wireless local loop technology. SWBT further proposes that the 2390-2400 MHz spectrum band be paired with another available spectrum band, 2300-2310 MHz, for a more efficient deployment of wireless local loop technology. SWBT's proposal to allocate this paired spectrum exclusively for wireless local loop, as set forth in SWBT's Comments to the NPRM, would clearly benefit the greater segment of the public than any other application suggested for this spectrum. SWBT's proposal also recognizes and accommodates the legitimate and valuable contributions and spectrum requirements of amateur radio users.

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* **All abbreviations used herein are referenced within the text.**

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SOUTHWESTERN BELL TELEPHONE COMPANY

Southwestern Bell Telephone Company (SWBT), by its attorneys and pursuant to Section 1.405(b)[1] of the Federal Communications Commission's (Commission) Rules, respectfully submits its Reply Comments regarding Comments filed in response to the Commission's Notice of Proposed Rulemaking (NPRM) herein.[2] In its NPRM, the Commission sought Comments on potential applications for 50 Megahertz (MHz) of radio spectrum that is to be transferred to the private sector as required by the Omnibus Budget Reconciliation Act of 1993 (OBRA). The specific spectrum which is the subject of this proceeding consists of the 2390-2400 MHz, 2402-2417 MHz, and 4660-4685 MHz spectrum bands.[3] The Commission's stated goal in the reallocation of this spectrum is to provide for the introduction of new services and the enhancement of existing services.

In its Comments, SWBT proposed that the 2390-2400 MHz spectrum band be paired with the 2300-2310 MHz spectrum band which

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[1] 47 C.F.R. § 1.405(b).

[2] In the Matter of Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, ET Docket No. 94-32, Notice of Proposed Rulemaking (released November 8, 1994).

[3] NPRM at ¶ 1.

has also been identified for reallocation,[4] and that this paired spectrum be allocated exclusively for the deployment of wireless local loop (WLL) technology.[5] SWBT's proposal for this paired spectrum is not only the most feasible but also would result in far greater public benefit than any of the other proposals for this spectrum.

I. THE RECORD IN THIS PROCEEDING CONFIRMS THE SUBSTANTIAL PUBLIC INTEREST BENEFITS OF SWBT'S PROPOSAL TO ALLOCATE THE PAIRED 2390-2400 MHz AND 2300-2310 MHz SPECTRUM BANDS FOR THE DEPLOYMENT OF WIRELESS LOCAL LOOP.

In response to the Commission's NPRM, over eighty (80) parties filed Comments in this proceeding. Approximately thirty-four commenting parties specifically addressed a variety of proposed applications for the 2390-2400 MHz spectrum band. At least eleven other parties commenting on proposed applications for the 2390-2410 MHz spectrum band, including large and small telephone companies, manufacturers and trade associations, supported SWBT's proposal to utilize this spectrum for the deployment of wireless local loop technology.[6] SWBT's proposal to

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[4] In its NPRM, the Commission recognized the potential public interest and benefit of also reallocating the 2300-2310 MHz spectrum band in this proceeding. The 2300-2310 MHz spectrum band has also been identified for reallocation from government use. NPRM at ¶ 17.

[5] WLL would replace the drop wire, as well as a portion of the telephone distribution plant, that presently provides telephone service to residences and businesses. As such, WLL is a fixed service with the potential for some ancillary mobile applications.

[6] Parties supporting SWBT's proposal to allocate the 2390-2400 MHz spectrum band for wireless local loop include: Bell Atlantic, NYNEX, U S WEST, Organization for the Protection and Advancement of Small Telephone Companies (OPASTCO), Rochester Telephone, TDS

(continued...)

utilize this spectrum for deployment of wireless local loop technology is supported by more than three times the number of parties supporting any of the other proposed applications for the 2390-2400 MHz spectrum band. SWBT believes that this widespread support for its proposal to allocate the 2390-2400 MHz spectrum band, paired with the available 2300-2310 MHz spectrum band, for the deployment of wireless local loop reflects that this allocation would clearly result in the greatest public benefit for this spectrum.

As SWBT described in its Comments, the benefits to the public resulting from allocating this paired spectrum for the deployment of WLL technology are potentially enormous. The use of wireless technology allows customer traffic to be concentrated "in the air," resulting in a far more efficient use of the telephone feeder and distribution network. In addition, WLL technology is digital, and can be fully encrypted to allow private and secure communications. The low antenna heights and low power, with attendant frequency reuse, lead to very high capacity and spectral use efficiency. The availability of bandwidth on demand and digital transmission also permit advanced innovative applications arising from wireless access to the public switched telephone network, such as remote meter reading and rapid recovery systems for natural disasters.

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[6](...continued)
Telecommunications Corp., United States Telephone Association, SR Telecom, Inc., and Tadiran Telecommunications Ltd. While not specifically endorsing SWBT's specific proposal, Avant-Garde Telecommunications, Inc. supports the concept of allocating spectrum for the deployment of wireless local loop technology.

Significantly, as several parties recognize in their Comments, these broad public interest benefits which would result from the deployment of WLL technology are not limited to densely populated urban areas.[7] In rural areas, WLL radio ports can be mounted higher than at conventional elevations, permitting a single radio port to efficiently serve an area with a lower density of customers. As a result, WLL has the potential to spur development of rural telephone infrastructure, which in turn would contribute to lowering the cost and improving the efficiency of rural telephone service. It can bring economical telephone service to areas which are currently unserved or underserved. WLL technology will also permit easier provision of new service and less expensive rehabilitation and replacement of aging copper plant, and will likely cause far less inconvenience to customers.

The enormous potential benefits of WLL technology, summarized herein, are undisputed. No party filing Comments in this proceeding has proven that deployment of WLL technology would not be in the broadest public interest. SWBT would therefore again urge the Commission to allocate the 2390-2400 MHz spectrum band, paired with the available 2300-2310 MHz spectrum band, for the exclusive deployment of wireless local loop technology. This allocation would result in far greater public benefit than any of the other suggested applications for this spectrum.

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[7] See e.g., Comments of U S WEST at p. 4; Comments of OPASTCO at p. 2; Comments of Rochester Telephone Corporation at p. 2.

II. THE ALTERNATIVE PROPOSALS FOR THE 2390-2400 MHz SPECTRUM BAND WOULD NOT BENEFIT THE BROAD PUBLIC INTEREST AND WOULD BE INCONSISTENT WITH THE COMMISSION'S UNDERLYING GOALS.

Other parties filing Comments suggested alternative applications for the 2390-2400 MHz spectrum band. These alternatives included proposals relating to aeronautical audio and visual services (AAVS), mobile satellite service (MSS), Part 15 and unlicensed PCS, private land mobile services, and public service applications. For the reasons summarized below, each of these alternative proposals are deficient and should be rejected by the Commission.

Aeronautical Audio/Visual Services

In its Comments, In-Flight Phone Corporation (In-Flight) proposed that the Commission allocate the 2390-2400 MHz spectrum band for its use in providing a new airline audio and video service. In-Flight's proposed allocation is supported by only two potential customers, Continental Airlines and America West Airlines, and a potential content provider, Capital Cities/ABC, Inc. A potential competitor, Claircom Communications Group, L.P. questions whether In-Flight's proposal is in the public interest and suggests that the Commission examine other spectrum options for new AAVS before allocating the 2390-2400 MHz spectrum band as proposed by In-Flight.

It is clear that In-Flight's proposed application for this spectrum would benefit a much more limited population than SWBT's WLL proposal, while utilizing scarce and valuable spectrum resources. As In-Flight stated earlier in this proceeding, its proposed application has the potential to furnish approximately 1.4

million commercial air travelers with "real time" video and audio information and entertainment services. However, In-Flight apparently relies on the total number of average daily air passengers, without recognizing, as it must, that only a small fraction of air passengers would be likely to pay for and utilize these information and entertainment services. While In-Flight's proposal may have the potential to reach 1.4 million air passengers, WLL would have the potential to reach nearly 100 million households with residential telephone service,[8] plus an untold number of business telephone subscribers.

In an apparent recognition of the broad and substantial public benefits which would result from SWBT's WLL proposal, In-Flight attempts to improperly characterize WLL as a service which is not a favored "new service," and which could be deployed using existing Basic Exchange Telecommunications Radio Service (BETRS) or Personal Communications Service (PCS) spectrum. As numerous commenting parties recognize,[9] the regulatory and other deployment restrictions relating to BETRS spectrum make it wholly unsuitable for anything but limited rural deployments. It is inadequate for any urban or suburban deployment. Likewise, PCS spectrum is not favorable for the deployment of WLL technology. The Commission has made it quite clear that PCS spectrum is intended for primarily

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[8] Alexander Belinfante, "Telephone Subscribership in the United States," Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission (released November, 1994).

[9] See Comments of USTA at p. 23; Comments of Bell Atlantic at p. 3; Comments of NYNEX at p. 3; Comments of OPASTCO at p. 3; Comments of Rochester Telephone Corp. at p. 1.

mobile applications.[10] SWBT's WLL proposal, on the other hand, is primarily a fixed application, with only ancillary potential for mobile applications. In addition, the build-out requirements relating to PCS spectrum are based on population coverage, which is inconsistent with the most efficient deployment of WLL technology.

Finally, In-Flight suggests that its AAVS proposal would not interfere with amateur use of the 2390-2400 MHz and 2300-2310 MHz spectrum bands. SWBT's research indicates the contrary, i.e., that there are significant opportunities for In-Flight's proposed AAVS to interfere with existing amateur use of the subject spectrum bands. For example, some of the research and experimentation conducted by amateurs involves "moon bounce" and tropospheric scatter. These applications may also interfere with an aircraft's reception of an AAVS signal, and the signal transmitted or reflected from an aircraft may overwhelm and cause harmful interference to the amateur receiver, which is looking for a very weak received signal. As In-Flight notes in its Comments, an aircraft flying at 30,000 feet is within line of sight of any transmitter located within a 250 mile radius of the aircraft. Thus, while some sharing between AAVS and amateur use may be possible, it is by no means as simple as In-Flight claims.

Mobile Satellite Service (MSS)

In its Comments in this proceeding, the Loral/QUALCOMM Partnership, L.P. (LQP) proposes that the 2390-2400 MHz spectrum

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[10] See 47 C.F.R. § 24.3; See also letter from Regina M. Keeney, Chief, Wireless Telecommunications Task Force to A. Thomas Carroccio, Esq. dated November 15, 1994, attached hereto as Exhibit 1.

band be allocated to provide MSS uplinks. LQP also proposes that the 2402-2417 MHz spectrum band be allocated to provide MSS downlinks.

SWBT does not believe that allocating the 2390-2400 MHz spectrum band to provide MSS uplinks would be in the broad public interest, especially since spectrum has already been allocated to MSS.[11] Furthermore, although MSS is not yet operational on a commercial basis, LQP is apparently asking for additional spectrum based solely on the weight of marketing forecasts which LQP suggests indicate more spectrum will be needed for MSS when service begins. SWBT suggests that it would clearly not be in the public interest to allocate additional spectrum to MSS at this time. LQP's estimates of market size and spectrum requirements appear to be premature and unsubstantiated.

In addition, another MSS proponent, American Mobile Satellite Corp. (AMSC), previously asserted in this proceeding that the 2390-2400 Mhz spectrum block would not be appropriate for MSS uplinks due to the nearby Part 15 usage. Finally, as both Cornell University and the National Astronomy and Ionosphere Center, and the National Academy of Sciences' Committee on Radio Frequencies state in their Comments, LQP's proposal to utilize the 2402-2417 MHz spectrum band for downlink purposes would be disastrous for the invaluable radio astronomy work being conducted at Arecibo, Puerto Rico.

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[11] As the Commission also recognized in fn. 28 of the NPRM, in the near future it will address in a separate proceeding the specific issue of providing additional spectrum for both unlicensed PCS and MSS.

Part 15 and Unlicensed Data-PCS Proposals

Several parties, including Apple Computer, Inc. and Compaq Computer Corp. have suggested that the Commission allocate the 2390-2400 MHz spectrum block for the use of unlicensed Data-PCS devices. Despite their claims to the contrary,[12] these commenters can offer no assurances that unlicensed Data-PCS devices will not interfere with existing amateur use of this spectrum band. Rather, SWBT suggests that the present and planned amateur uses of the 2390-2400 MHz spectrum band (such as fast-scan television, which requires a high signal-to-noise and signal-to-interference ratio) would not be tolerant of interference from unlicensed Data-PCS devices. These devices may dramatically reduce the utility of this frequency range.

Furthermore, as stated in SWBT's Comments, allocating the 2390-2400 MHz spectrum band, paired with the 2300-2310 MHz band, for WLL would permit the Commission to most efficiently allocate the uniquely "pairable" frequency bands available in this proceeding. While WLL requires paired spectrum, unlicensed Data-PCS does not require paired spectrum and can therefore be accommodated in other spectrum bands. In short, the 2390-2400 MHz spectrum band would appear to be an inadequate and inappropriate spectrum band to allocate to unlicensed Data-PCS.[13]

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[12] See, e.g., Comments of Apple Computer, Inc. at pp. 9-10.

[13] In its Comments, Microsoft asserts that the 2390-2400 MHz spectrum band could not be used for commercial services given the noise characteristics. However, results relating to the WLL system currently being tested by SWBT suggest that an appropriate deployment methodology would most likely provide sufficient link margin to overcome any interference of the type suggested by

(continued...)

SWBT suggests that spectrum in the 4.6 GHz range has technical advantages relating to unlicensed Data-PCS over the spectrum involved in the present proceeding. SWBT agrees with Alcatel Network Systems, Inc.'s (ANS) suggestion that the Commission encourage the National Telecommunications and Information Administration (NTIA) to expedite the planned reallocation of the 4635-4660 MHz spectrum band. This reallocation, when combined with the 4660-4685 MHz spectrum band, could provide a larger block of spectrum for a multiplicity of services proposed by various entities, including public safety applications and unlicensed Data-PCS. In previous Commission pleadings, advocates of Data-PCS, including Apple Computer, Inc., have asserted that 40 MHz of spectrum would be the minimum required for Data-PCS applications. SWBT suggests that spectrum available in the 4.6 GHz range is the most appropriate candidate for unlicensed Data-PCS applications, since it represents the largest block of contiguous available spectrum, and several published propagation test results confirm the suitability of the 4 GHz range for low power indoor systems.[14]

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[13](...continued)
Microsoft. Additionally, the technical standards contained in Part 15 of the Commission's Rules also help ensure that harmful interference is avoided or minimized.

[14] See Devasirvatham, D.M.J. et al., "Radio Propagation Measurements at 850 MHz, 1.7 Ghz and 4 Ghz Inside Two Dissimilar Office Buildings," Electronics Letters, March 29, 1990, pp. 445-447; Hawbaker, D.A. and Rappaport, T.S., "Indoor Wideband Radio Propagation Measurement System at 1.3 GHz and 4.0 MHz," Proceedings of IEEE VTC '90, May, 1990, pp. 626-630; Devasirvatham, D.M.J. et al., "Multi-Frequency Radiowave Propagation Measurements in the Portable Radio Environment," Proceedings of IEEE ICC '90, June, 1990, pp. 1334-1340.

Private Land Mobile Services and Public Safety Applications

Several commenting parties proposed that the 2390-2400 MHz and the 2300-2310 MHz spectrum bands be allocated on a paired basis for private land mobile applications. While SWBT recognizes that private systems are important to individual users, significant spectrum has already been allocated for such use, and new digital technologies are being deployed which will enhance the capacity of these existing systems. In addition, new PCS offerings will increase alternatives for these users. These factors could result in an underutilization of the existing private land mobile spectrum. Therefore, allocation of the 2390-2400 MHz and 2300-2310 MHz spectrum bands for this use would appear to be premature.

Furthermore, as Motorola, Inc. pointed out in its Comments, other available spectrum bands (such as 380-400 MHz and 1710-1760 MHz) not only offer a larger amount of spectrum, but could be preferable from an engineering perspective for private systems. Although these spectrum bands are not immediately available, SWBT agrees that this spectrum would likely be better suited to either private or public safety use. In addition, SWBT would suggest that the potential demand for additional spectrum by these users will be better known when this spectrum becomes available.

Several commenting parties suggest that some portion of the 50 MHz of spectrum available for reallocation in this proceeding should be allocated for public safety applications, including video. SWBT agrees that advanced systems to support public safety applications are in the public interest and spectrum

should be available for such applications. SWBT respectfully suggests, however, that allocating either the 2390-2400 MHz or 2300-2310 MHz spectrum bands for public safety applications would not be in the broad public interest. As the Los Angeles County Sheriff's Department stated in its Comments, two to four 6 MHz video channels (or a total of 24 MHz) would be required for its proposed public safety application. Thus, the 4660-4685 MHz spectrum band also under consideration in this proceeding would satisfy the spectrum requirements and would appear to be more appropriate for public safety applications such as those suggested by the Los Angeles County Sheriff's Department.

III. SWBT BELIEVES ITS WLL PROPOSAL WILL SUFFICIENTLY ACCOMMODATE AMATEUR USERS.

As it has stated on numerous occasions, most recently in its Comments herein, SWBT recognizes the valuable contributions to the public of amateur radio users. SWBT, however, continues to believe that it would be problematic for the paired 2390-2400 MHz and 2300-2310 MHz spectrum bands to be shared by amateur users and WLL on a "co-primary" basis. Such shared use would potentially cause unacceptable co-channel and adjacent channel interference to one of the services, particularly where amateur use and WLL systems are in close proximity to each other.

In its Comments herein, SWBT suggested that the Commission allocate the entire 2390-2400 MHz and 2300-2310 paired spectrum bands exclusively for WLL. In order to accommodate the spectrum needs of amateur radio users, SWBT suggested that the Commission allocate the 2400-2410 MHz band spectrum for the

exclusive use of amateurs. As detailed in SWBT's Comments, this allocation is consistent with reported existing use by amateurs of the 2400-2402 MHz spectrum band for amateur satellite operations, and the reported planned expanded use of the 2400-2410 MHz band for future generation amateur satellite operations. Alternatively, SWBT suggested that amateurs be allowed to use 2303.5-2304.5 MHz and 2393.5-2394.5 MHz on a secondary basis while allowing WLL to use this spectrum on a primary basis. This allocation would allow amateur users to continue to operate as they do today (as secondary users), while providing necessary interference protection for SWBT's proposed WLL application.

In a further effort to accommodate amateur radio users, SWBT suggests that the Commission consider allocating the 2310-2320 MHz spectrum band for amateur use, at least on a secondary basis. While this spectrum is a portion of that currently planned for allocation to Digital Audio Radio Service (DARS), this allocation has not yet taken place nor has the service been implemented. Additionally, SWBT agrees with those commenting parties who suggest that allocating the 2310-2360 MHz spectrum band for DARS in any event would be inappropriate, given that the rest of the world employs 1.5 GHz for this service. Finally, SWBT would recommend that the Commission encourage the NTIA to identify spectrum already allocated to the federal government which might be reallocated to amateurs on a secondary basis to satisfy the current and anticipated amateur requirements. As an example, amateurs could receive an additional secondary allocation from within the 2360-2390 MHz range currently used for flight test telemetry.

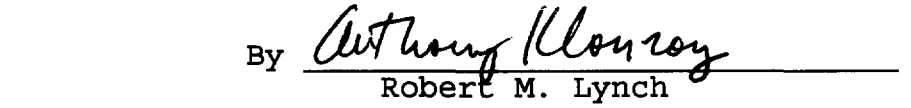
IV. CONCLUSION

As demonstrated in its Comments, and in these Reply Comments, SWBT's proposal to allocate the 2390-2400 MHz spectrum band, paired with the 2300-2310 MHz spectrum band for the exclusive use of wireless local loop, would result in the greatest public benefit for this spectrum. Wireless local loop is new, but not a futuristic technology. For many deployment scenarios, the technology necessary to deploy WLL exists today. SWBT, NYNEX and U S WEST have all conducted trials of WLL, and these on-going trials confirm that WLL technology will be available for commercial deployment in the very near future.

Based on the record in this proceeding, SWBT urges the Commission to allocate the 2390-2400 MHz spectrum band, paired with the 2300-2310 MHz spectrum band, exclusively for deployment of wireless local loop technology.

Respectfully submitted,

SOUTHWESTERN BELL TELEPHONE COMPANY

By 

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January 6, 1995

Exhibit 1

T111794G

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Washington, D.C. 20554

November 15, 1994

A. Thomas Carroccio, Esq.
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Dear Mr. Carroccio:

This is in response to your November 7, 1994, letter asking whether spectrum in the broadband Personal Communications Services ("PCS") may be used to provide fixed communications services. As explained more fully below, although the basic concept of PCS embodies primarily mobile or portable communications, the Commission has delineated circumstances in which PCS licensees also may provide fixed services.

The relevant rule is Section 24.3, 47 CFR § 24.3, which provides in pertinent part:

> PCS licensees may provide any mobile communications service on their assigned spectrum. Fixed services may be provided only on an ancillary basis to mobile operations.

As the Commission stated in adopting Section 24.3, the limited amount of spectrum allocated to PCS is available to meet the primary purpose of serving people on the move, and demand for fixed services generally can be accommodated in other frequency bands or through other media. *See Amendment of the Commission's Rules to Establish New Personal Communications Services,* Second Report and Order, 8 FCC Rcd 7700, 7712-13 (1993).

The Commission, however, also expressly intended the definition of PCS to be sufficiently inclusive to accommodate a wide range of services and technologies, including new and creative applications. *Id.* In this regard, the staff believes that PCS includes fixed services ancillary to or in support of the provision of a wide range of portable and mobile wireless communications services to individuals and businesses. The Commission anticipated that PCS will be provided by a variety of technologies and will be integrated into, and work with, competing networks. The staff believes that examples of permissible fixed services

include links connecting PCS base stations and other network operations facilities; transmission of PCS network control and signalling information; and facilities linking users' premises to PCS networks.

I hope that you find this discussion instructive with respect to the issues raised in your letter. In any event, of course, please contact me if you have further questions.

Sincerely,

Regina M. Keeney
Chief, Wireless Telecommunications Task Force

CERTIFICATE OF SERVICE

I, Katie M. Turner, hereby certify that the foregoing, "Reply Comments of Southwestern Bell Telephone Company" in ET Docket No. 94-32 has been filed this 6th day of January, 1995 to the Parties of Record.

Katie M. Turner

Katie M. Turner

January 6, 1995

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